

Patent Claims

- 5 1. A process for the manufacture of aluminosilicates which are dispersible
in aqueous and/or aqueous-acidic media,
characterised in that
one or more hydrolyzable aluminium compound(s) and
one or more hydrolyzable organosilicon compound(s)
10 are hydrolyzed jointly or discontinuously in space or time.
2. A process according to claim 1,
characterised in that the hydrolyzable compounds of claim 1 are
compounds of the type $M(O-R-A-R')_z-n(O-R'')_n$, wherein independent of
15 each other
M is aluminium or silicon,
R'' is a hydrocarbon residue having 1 to 30 carbon atoms,
R' is a hydrocarbon residue having 1 to 10 carbon atoms,
R is a bivalent hydrocarbon residue having 1 to 10 carbon atoms, and
20 A represents a heteroatom of main group 6 (oxygen group) or main
group 5 (nitrogen group) of the periodic system, preferably oxygen or
nitrogen, wherein, if A represents an element of main group 5, A
bears hydrogen or a C₁ to C₁₀ alkyl residue or a C₆ to C₁₀ aryl -/alkyl
aryl residue as additional substituent(s) for the saturation of its va-
25 lences, and
n is an index for the numbers 0, 1, 2, or 3 if M is aluminium, or is an
index for the numbers 0, 1, 2, 3, or 4 if M is silicon, and
z is an index for the number 3 if M is aluminium, or is an index for the
30 number 4 if M is silicon.
3. A process according to claim 2,
characterised in that n is equal to 0.
4. A process according to claim 2,
35 characterised in that n is equal to 3 if M is aluminium and/or n is equal
to 4, if M is silicon.

5. A process according to any one of claims 1, 2, or 4,
characterised in that silicon alcoholates having C₁ to C₈ hydrocarbon
residues, preferably saturated C₂ to C₄ hydrocarbon residues, are used
as hydrolyzable silicon compounds.
6. A process according to any one of the preceding claims,
characterised in that, prior to addition of the hydrolyzable aluminium
compound, the hydrolyzable silicon compounds are prehydrolyzed with
water or dilute acid using 0.5 to 3 moles of water, preferably 1 to 2
moles, per mole of silicon, i.e. less than the stoichiometric amount.
7. A process according to any one of the preceding claims,
characterised in that aluminium alcoholates having C₂ to C₁₂, preferably
C₄ to C₈, most preferably saturated C₆ to C₈ hydrocarbon residues are
used as hydrolyzable aluminium compounds.
8. A process according to any one of the preceding claims,
characterised in that the hydrolysis is performed at 20 to 98 °C,
preferably 85 to 98 °C.
9. A process according to any one of the preceding claims,
characterised in that during or after the hydrolysis the reaction products
of claim 1 are jointly subjected to hydrothermal ageing in an aqueous
environment at temperatures of 40 to 220 °C for a period of greater than
0.5 hour.
10. A process according to claim 9,
characterised in that the hydrothermal ageing is conducted for a period
of 0.5 hour to 24 hours, preferably 1 to 20 hours.
11. A process according to any one of claims 9 or 10,
characterised in that the hydrothermal ageing is conducted at 80 to
130 °C.

12. A process according to any one of claims 9 to 11,
characterised in that the hydrothermal ageing is conducted in the
presence of acid.
13. A process according to claim 12,
characterised in that the acid is added after the hydrolysis, but prior
to hydrothermal treatment.
14. A process according to any one of the preceding claims,
characterised in that the acid which is present during or after the
hydrolysis is a monovalent organic C₁ to C₆ acid or a monovalent
mineral acid.
15. A process according to any one of the preceding claims,
characterised in that the hydrolyzable metal compounds were pre-
viously purified by distillation, filtration, or centrifugation and/or are
liberated from metal ions by ion exchange.
16. A process according to any one of the preceding claims,
characterised in that the aluminium compound/silicon compound
ratio is from 99.5 wt.% : 0.5 wt.% to 50 wt.% : 50 wt.%, each refer-
ring to Al₂O₃ and SiO₂.
17. A process according to any one of the preceding claims,
characterised in that the reaction product of the invention is calcined
at temperatures of between 550 °C and 1,500 °C for a period of 0.5
hour to 24 hours.
18. The use of the alumino-silicates manufactured according to the pro-
cess defined in the preceding claims as catalysts, catalyst supports,
for the manufacture of catalysts, as starting materials for ceramics, as
coating materials, and as binder components and/or rheological mo-
difiers in aqueous systems.

19. The alumino-silicates manufactured according to any one of the processes defined in claims 1 to 17.
- 5 20. Alumino-silicates dispersed in aqueous or aqueous/alcoholic media, characterised in that the alumino-silicate is manufactured according to any one of the processes defined in claims 1 to 17.
- 10 21. The alumino-silicates dispersed in aqueous or aqueous/alcoholic media according to claim 20, characterised in that the alumino-silicate, prior to dispersion in the aqueous or aqueous/alcoholic medium, is present in a dried, essentially anhydrous state.
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